Agilent E6474A
Indoor Wireless
Measurement System

Product Overview

Optimize the indoor performance of your wireless network

Use your Agilent drivetest tools indoors—and maximize your test equipment budget

Make indoor data collection easier with accesories designed for comfort and portability

Satisfy your high-use customers and reduce churn

Agilent Technologies

Improve your network's indoor performance

Your wireless phone customers want to use their phones anywhere—at airports, in elevators, at the office, and in any other indoor locations.

To make sure they receive the service they expect, you need a way to check your network's voice and data quality of coverage in areas that are not easily measured through traditional drive-test methods. You need to verify in-building wireless networks and perform in-building evaluation of the outdoor wireless network. You may also need to troubleshoot the cause of customer problems.

Maximize your test equipment budget

You can measure the quality of a network's indoor RF coverage using the same set of tools that you already use for outdoor drive testing. With the indoor wireless measurement system, you can extend the capabilities of your Agilent E6474A wireless network optimization platform to characterize TDMA, CDMA/cdma2000, GSM/GPRS, GAIT, or UMTS networks indoors.

All the measurements available in the Agilent E6474A drive-test system are also available for indoor testing. These measurements include, for example, phone-based channel, RSSI and FER parameters for voice, throughput, and retransmission data values. Also the network independent measurements, offered by the Agilent digital receiver, including interference analysis, CW Power and Spectrum Analysis, help you quickly troubleshoot issues.

By choosing the Agilent indoor measurement system, you will maximize your investment in test equipment. Time spent training is reduced since the drive-test and indoor system share the same user interface. And, since indoor measurements typically are not performed as often as drive testing, you can share the indoor software and accessories among several users.

Save time through efficient measurement collection

The indoor wireless measurement system takes the measurements you make with a phone or receiver and correlates them with specific locations in a building. The process is simple. First, you display the floor plan of the building to be characterized on the pen tablet computer. (You can enter a scanned floor plan into the computer easily. Supported image types include tab and bmp.)

Next, you indicate your position at different points in the building by marking the floor plan displayed on the computer screen. As you walk around the building, the computer displays measurement data on the floor plan at each waypoint that you mark.

Measurements are interpolated in a straight line between waypoints. You can choose what measurement data is displayed on the floor plan by linking a waypoint to a particular phone or receiver measurement. That measurement is then illustrated with a chosen color scale. An auto legend feature lets you look at previous measurements and devise a sensible legend based on the range of the measurement data.

The standard drive-test platform views are also available for indoor use. These include, for example, technology specific signal parameter views, layer 3 message decodes, customizable view and the time-charting capabilities.

Accessories designed for comfort and portability

Making indoor measurements requires that you carry all the test equipment around a building. You'll want a properly designed indoor measurement system that maximizes your effectiveness. It needs to be easy to carry and allow you to enter position information quickly onto a floor plan of the site.

Agilent's indoor measurement system is easy to work with and easy to carry. A pen-based Tablet PC (not supplied) is used for quick data entry onto a digitized floor plan. Customized backpacks are used to hold receivers, phones, connection hubs, batteries, antennas, and all associated cables. The backpacks have beed designed with adjustable chest and waist straps to improve your comfort.

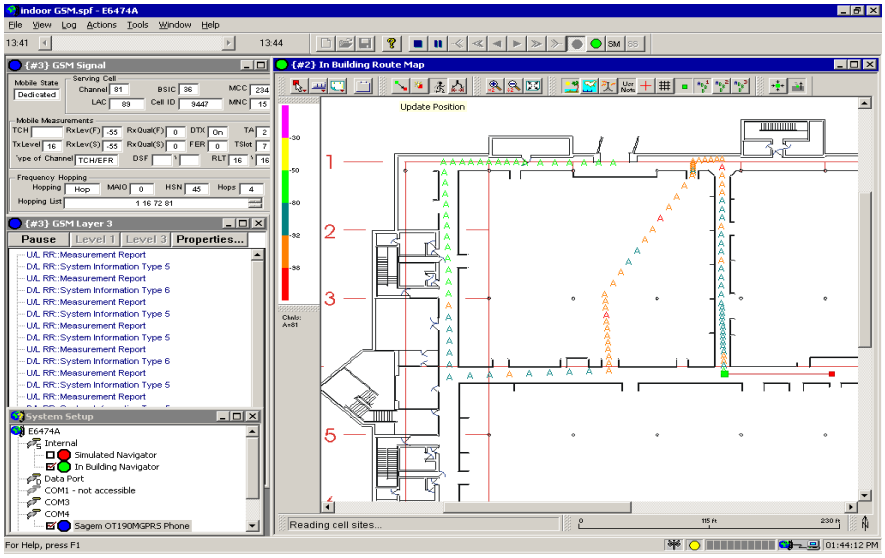
Build a system with extensive measurement capability

The indoor wireless measurement system consists of measuring devices and indoor measurement accessories.

Two types of measuring device are available: test phones and digital receivers. The same phones and receivers used in Agilent's drivetest systems are used for indoor measurements.

Phone support is available for TDMA, CDMA/cdma2000, GSM/GPRS, GAIT and UMTS. They are connected to the tablet computer using a serial connection. Some models of test phones can be ordered from Agilent (please check with your Agilent representative for availablility).

Agilent receivers are available for TDMA, CDMA/cdma2000, GSM, iDEN, and UMTS technologies in multiple bands. These receivers provide measurements of the wireless network that are independent of a phone. The receivers can be purchased directly from Agilent.



Easily manipulate the measurement display

The displayed floor plan can be manipulated to suit your needs with features such as pan and zoom. A floor plan can be auto-scaled so that all waypoints are visible, or it can be auto-panned so that the map moves as waypoints are entered. Multiple in-building map images can be combined on the in-building routemap view. A street map layer can also be added to show areas around the indoor test region.

Export data to your post-processing tools

All indoor measurement data can be recorded and played back later. The data can also be exported in different formats for use with, for example, Agilent's Analysis Reporter (E6474A-758), Microsoft Excel, and MapInfo, or via direct access for use in Agilent supplied post-processing tools (Actix DV (E6474A options 75x)) or third party tools, such as Actix Analyser.

Custom accessories designed for comfort and portability

The following accessories enable indoor measurements and are an essential part of an ergonomic, easy-to-use indoor measurement system. All of the accessories can be purchased directly from Agilent.

Note: Please refer to the E6473B Direct Connect Hub Product Overview (5988-8680EN) for further information.

Comfortable, portable operation

A portable carry pack and two indoor measurement backpack options are available with the following:

The portable carry pack option (E6473B-022) is designed for portable phone-only configuration and will hold a single battery and a direct connect hub (E6473B-015)[1].

The Single receiver backpack option (E6473B-023) will carry one Receiver, one direct connect hub[1] and a battery[2].

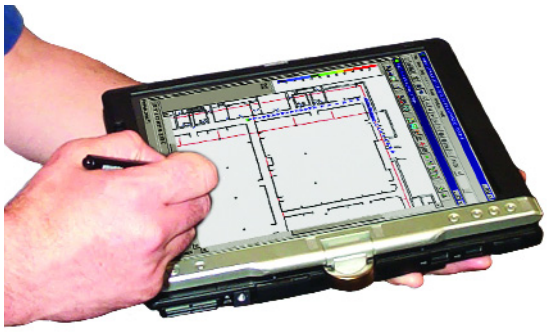
- Dual receiver backpack option (E6473B-024) has the capacity to carry two receivers, two antennas, one direct connect hub[1] and a battery[2]. Alternatively two direct connect hubs can be daisy-chained to support multiple phone operation[2].
- Integrated antenna compartments.
- Protected phone/accessory storage compartments.

A lithium-ion battery and charger for portable receiver power.

1. **E6473B-015 which provides six serial ports to connect up to two (dual-port) phones and two receivers. Connects to Tablet PC using a single USB cable.**
2. **Provides power for phones and receivers using lithium ion battery**

Flexible configurations

Depending on your indoor test needs, Agilent recommends different options. Three basic types of indoor measurement systems are phone-based, receiver-based, and phone and receiver-based. The following scenarios describe the type of system typically required for various tests.



Measuring an indoor test transmitter

To make CW transmitter measurements in the building you want to characterize, you first set up a CW test transmitter somewhere in the building and then make CW measurements to determine the effectiveness of the test transmitter's antenna location. For this task, a *receiver-based system* is required to perform the CW measurements.

A *phone-* and *receiver-based system* is more desirable because it allows you to make CW measurements of the test transmitter using the receiver, and signal strength measurements of the existing outdoor network using a phone.

Measuring the coverage provided by the outdoor network

You may need to measure the current state of the coverage in a building in order to determine what additional coverage needs to be added. A phone-based system can be used to perform this task only if the existing coverage is adequate enough to maintain a call. A receiver-based system is effective in areas of poor coverage because it does not depend on any communication with the network in order to make measurements.

A dual receiver system may be required for dual-band networks or where there is multiple technology coverage.

Troubleshooting indoor coverage

If you need to determine the cause of poor indoor service, you can make measurements to determine why calls are being dropped or why voice quality is poor. A phone- and receiver-based system is required to perform this indoor troubleshooting. The phone is used to verify that a problem exists, and the receiver to determine the cause of the problem.

Testing data networks

The E6474A drive-test system supports data measurement options for optimization of wireless data networks, essential in the roll-out of 2.5G and 3G networks. It provides the sequencing of various data transaction scenarios to commercial FTP or http servers and to Agilent's data server application, giving comprehensive measurements of IP and Application layer quality of service parameters, from a wireless users perspective. Please refer to the Agilent Wireless Data Measurement Product Overview (5980-2310E) for further information.

Ordering information

Technology specific software license options (covering TDMA, CDMA, cdma2000, GSM, GPRS, UMTS and iDEN) are available for phone only, receiver only or phone/Rx combination - E6474A-100 to E6474A-620. Please refer to the E6474A Configuration Guide (5988-2396EN) for detailed information.

A brief summary of related technology independant options follows:

E6474A-010: Multiple phone license

E6474A-030: Indoor measurement license

E6474A-700: Data Measurement client license

E6474A-710: Data Measurement server license

A brief summary of some related hardware options follows:

E6473B-015: Agilent high speed direct connect hub

E6473B-022: Portable carry pack hub kit

E6473B-023: Single receiver backpack hub kit

E6473B-024: Dual receiver backpack hub kit

A selection of cables to connect phones to the direct connect hub are available as E6473B-8xx numbers. Agilent also resell a number of test phones (E6473B-7xx) please refer to Configuration Guide (5988-2396EN) for further detail.

Computer hardware requirements

The Agilent E6474A system requires a PC. The PC requirements differ depending on the hardware configuration and on which parameters are being selected. For indoor configuration it is strongly recommended that a pen-interface Tablet PC is used.

Recommended minimum PC specifications:

- Windows® 2000 or XP (inc XP for Tablet PC)
- 600MHz PIII, 256MB RAM
- RS-232 DB9 serial port or USB Port
- Parallel port or USB Port (for software key)
- PCMCIA slot or a USB connection (for multiple hardware support)
- 500 MB hard disk space
- CD-ROM drive recommended for installation
- 1024 x 768 display resolution minimum

www.agilent.com/comms/contactus

For further information refer to:

Agilent E6474A Wireless Network Optimization Platform Product Overview (5988-7947EN)

Agilent E6474A Wireless Network Optimization Platform Configuration Guide (5988-2396EN)

E6473B Direct Connect Hub Product Overview (5988-8177EN)

Agilent Wireless Data Measurement Product Overview (5980-2310E)

Online assistance:
www.agilent.com/find/assist
By internet, phone or fax, get assistance with all your test and measurement needs.

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